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Myths and Misconceptions in Fall Protection

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Myths and Misconceptions in Fall Protection

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Introduction

Since 1973, when OSHA CFRs 1910 and 1926 began to influence the workplace, confusion about the interpretation of the standards has been a problem and fall protection issues are among them. . This confusion is verified by the issuance of 351 (as of 11/25/05) Standard Interpretations issued by OSHA in response to formally submitted questions asking for clarification. Over the years, many workers and too many ES&H Professionals have become “self-interpreters,” reaching conclusions that do not conform to either the Standards or the published Interpretations.

One conclusion that has been reached by the author is that many ES&H Professionals are either not aware of, or do not pay attention to the Standard Interpretations issued by OSHA, or the State OSHA interpretation mechanism, whoever has jurisdiction. If you fall in this category, you are doing your organization or clients a disservice and are not providing them with the best information available.

Several myths and/or misconceptions have been promulgated to the point that that they become accepted fact, until an incident occurs and OSHA becomes involved. For example, one very pervasive myth is that you are in compliance as long as you maintain a distance of 6 feet from the edge. No such carte blanche rule exists. In this presentation, this myth and several other common myths/misconceptions will be discussed.

This presentation is focused only on Federal OSHA CFR1910 Subpart D - Walking-Working Surfaces, CFR1926 Subpart M - Fall Protection and the Fall Protection Standard Interpretation Letters. This presentation does not cover steel erection, aerial lifts and other fall protection issues. Your regulations will probably be different than those presented if you are operating under a State plan.

Some Common Myths and Misconceptions

No. 1 - CFR1910 (General Industry) & CFR1926 (Construction) rules are Interchangeable

This misunderstanding is common. CFR1910 covers general industry operations and maintenance (General Industry). CFR1926 covers Construction, alteration, modification and demolition (Construction).

Unless an interpretation letter allows the use of a CFR1926 control, you can't assume it is acceptable to use for, say maintenance. The basic General Industry standard¹ states *"Every open-sided floor or platform 4 feet above adjacent floor or ground level shall be guarded by a standard railing on all open sides except where there is entrance to a ramp, stairway or fixed ladder..."*

That's it, a guardrail, nothing else. However, in 1978, OSHA issued a compliance directive, which is still in effect, allowing the use of alternate fall protection, which would include the use of personal fall protection, where the use of guardrails is not feasible. Then in April 1990, OSHA published a proposed CFR1910 rulemaking, (reissued in May, 2003). It defines acceptable General Industry fall protection to include personal fall arrest systems (PFAS), work positioning systems, travel restricting systems (restraint), fixed ladder climbing systems, hole covers, safety nets and a new proposed "designated area" category. The gap between the two regulations is closing, but there are still differences. As we proceed through this presentation they will become evident.

No. 2 - Six-foot Rule

Since it has already been introduced, let's move to the myth of the "so called" 6-foot rule where distance alone is the protection. OSHA has not made any ruling nor intended to make a rule that if a worker stays 6 feet away from the edge, that is OK. What will work? Your first step is to determine if this is a General Industry or Construction activity. For General Industry the newly proposed "designated area"² (Depicted in Exhibit 1.) actually comes close to the 6-foot rule, but with several conditions.. This is a modified Construction Warning Line System³, but for general industry use only. Employer compliance with a proposed rule, in lieu of compliance with an existing rule, is considered a "de minimus" violation⁴. De minimus conditions are violations of standards that, for whatever reason, do not at the time of inspection have an immediate relationship to safety and health and therefore are not included in a citation.

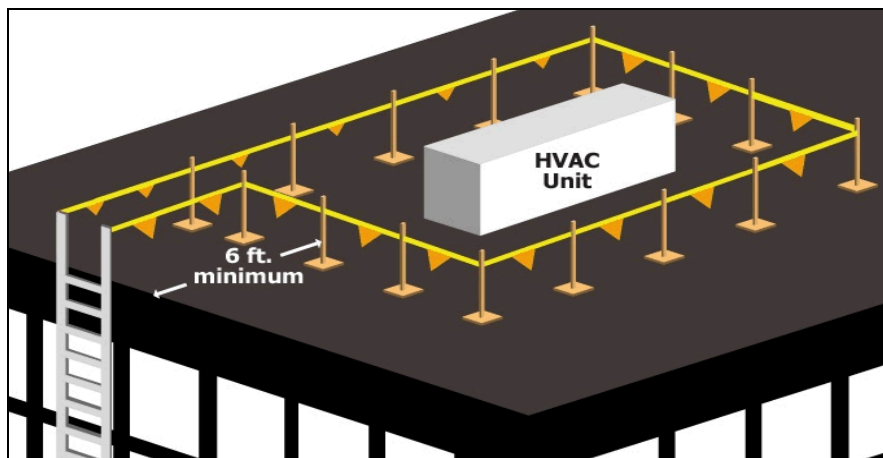


Exhibit 1 Designated Area

¹ CFR1910.23(c)

² April 1990 Proposed CFR1910.28(d)

³ 1926.502(f)(2)

⁴ Interpretation letter, 12/18/1997 to D. S. Mihou)

What is a Designated Area?

- Slope of 10 degrees or less, 4:12, a low slope roof
- Complies with the provisions of 1910.28(d), (a 16# force non-conforming guardrail)
- PLUS (added): Work must be of a temporary nature,
- Erected as close to the work area as permitted by the task,
- Perimeter no less than 6 feet from an unprotected edge,
- Access to designated area by a clear path formed by 2 lines, same criteria for lines and stanchions as above.

OK, so now we know that General Industry has several choices, rather than just the guardrail as originally stipulated in the standards.

For construction activities, fall protection distance is much more specific. The preamble to the CFR1926 Standard Subpart M, OSHA states the premise that “*OSHA has determined that there is no safe distance from an unprotected side or edge that would render fall protection unnecessary.*” That was the rule until July 1996, when in response to Dr. Nigel Ellis, a Standard Interpretation letter⁵ was written that concluded that “However, when employees working 50 to 100 feet away from the unprotected edge have been properly trained, then the situation can be considered a “de minimus” condition.” There are the basic premises and starting points in our determination of what is going to be required for fall protection.

One other activity that needs mentioning before proceeding is that the Construction standard gives an exception⁶, “*The provisions of this subpart do not apply when employees are making an inspection, investigation, or assessment of workplace conditions prior to the actual start of Construction work or after all Construction work has been completed.*” This exception is not activity specific, but it states construction work specifically, therefore it is not applicable to maintenance type activities.

Before continuing on to a “non-conforming guardrail”, let me clarify what “fall protection systems” the Construction provisions do offer in 1926.502. I will only reference the commonly misunderstood applications:

- 1926.502(f) Warning line systems only apply to roofing work on low-slope roofs.
- 1926.502(g) Controlled access zones only apply to overhead bricklaying⁷ and related work.
- 1926.502(h) Safety monitoring system only applies to roofing work on low-slope roofs 50-feet wide or less, or combination systems, i.e. warning line system and safety monitoring system only for roofing work on low-sloped roofs⁸.
- 1926.502(k) Other Fall protection plans are only available for leading edge work, precast concrete Construction work, or residential Construction work.

As with the General Industry Standard, Standard Interpretation letters have allowed a modified Warning line system, similar to the General Industry “Designated Area” but with several

⁵ Interpretation letter, 7/23/1996 to Dr. J. Nigel Ellis

⁶ CFR1926.500(a)(1)

⁷ 1926.501(b)(9)

⁸ 1926.501(b)(10)

differences and it is referred to as a “Non-conforming guardrail.” (Depicted in exhibit 2.) You may have heard it referred to as the 15-foot rule.

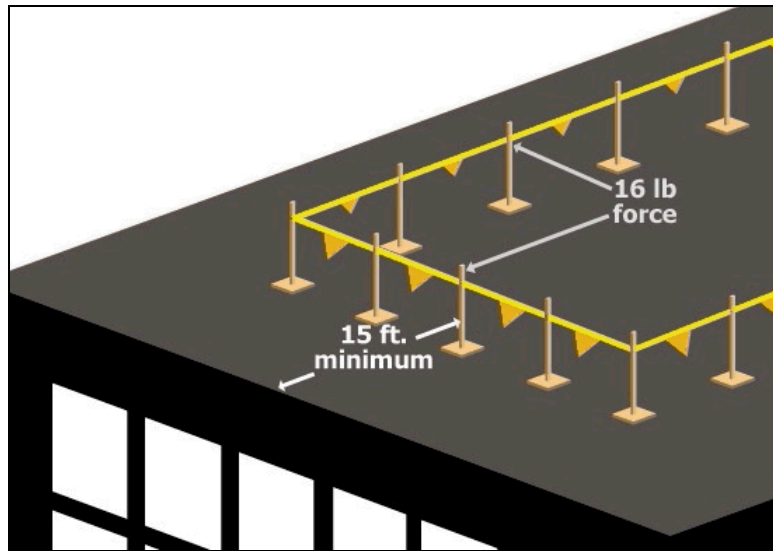


Exhibit 2. Non-conforming Guardrail

A “non-conforming guardrail”⁹, is a de minimus violation constructed according to the provisions below:¹⁰,

- The warning line is used 15 feet (+) from the edge of the unprotected side or hole,
- The warning line meets the requirements of 1926.502(f)(2),
- No work between the warning line and the edge,
- Employer effectively implements a work rule prohibiting going beyond the warning line.

Non-conforming guardrails are *similar* to the designated area but contain significant differences.

No. 3 - Fall Restraint

This is not a myth or misconception. This may be the answer to many of your required fall protection situations. Fall restraint is using physical apparatus to prevent a fall. If you cannot fall, the hazard is eliminated and fall protection is not an issue. Do not confuse fall restraint with fall positioning. Fall restraint does not allow any fall distance, fall positioning allows a fall distance not to exceed 2 feet.

Is fall restraint permissible according to OSHA instead of fall arrest in General Industry and/or Construction? The proposed 1910 changes to Sections D and I incorporate fall restraint¹¹ as Restraint line systems.

⁹ Interpretation letter, 5/12/2000, Barry A. Cole; also 11/02, 12/03, 1/05

¹⁰ 1926.502(f)(2)

¹¹ April 1990 Proposed CFR1910.28(g)

Where an employee is tethered, restraint line systems shall meet the applicable requirements of subpart I.¹² Restraint lines shall be capable of sustaining a tensile load of at least 3,000 pounds.

Fall restraint is only mentioned in the proposed change of CFR1910, not in the current standard or mentioned anywhere in CFR1926. However, this is where the interpretation letters come in again. Construction has similar guidelines in 2 standard interpretations, both dated 11/95¹³, so the answer is yes, fall restraint may be used in both General Industry and Construction activities.

Do you need a full body harness? No, body belts are acceptable since you can't fall anyway, but a full-body harness may be preferred, in case you get into a personal fall arrest system situation.

Are you restricted to a 6-foot lanyard? No, again the personal fall arrest system rules do not apply. You just have to make sure that your tether is short enough to prevent a fall in all directions from your anchor, not just the location where you are working. Can you use a standard lanyard with a shock absorber? Yes, both major equipment manufacturers have stated that the force of you falling down and even sliding, will not activate the shock absorber.

What anchorage is required? General Industry requires a 3,000 pound anchor. Construction requires either 3,000 pounds or twice the potential load. Remember, you may not be on a flat surface.

No. 4 - Ladders

Fall protection on fixed ladders of certain heights is required. The perceived misconceptions come in when we mix CFR1910 and 1026.

- General Industry standards¹⁴ require a cage or well when fixed ladders are between 20 and 30 feet in length, however ladders on towers, water tanks and chimneys may use ladder safety devices¹⁵. (Different issue, but one that needs your consideration. Do you agree that a ladder cage is an adequate fall protection device? I don't want an answer, just think about it.)
- Now, if you look further and get to the meat of the issue, go to an Interpretation letter¹⁶, *"...The employer requiring the use of ladder safety devices in lieu of cage protection and landing platforms on structures other than towers, water tanks, and chimneys may be issued a de minimus notice in lieu of a citation. The policy of using a De Minimus Notice in lieu of a citation is based on OSHA Program Directive #200-36, Subject: De Minimus Notice and prior proposed OSHA standard that allowed ladder safety devices to be used on all fixed ladders in lieu of cage protection."*
- Construction standards¹⁷ simply state that fixed ladders shall be provided with cages, wells, ladder safety devices, or self-retracting lifelines where the length of climb is less than 24 feet but the top of the ladder is at a distance greater than 24 feet above lower levels. Notice the difference in heights between the two standards?

The myth about ladders pertains to portable ladders and the belief that fall protection is never required. Never?

¹² April 1990 Proposed CFR1910.128(c)(11)

¹³ Interpretation letters 11/2/1995, Mike Amen and Dennis Gilmore

¹⁴ 29CFR1910(d)

¹⁵ 29CFR1910(d)(5)

¹⁶ Interpretation letter 3/18/1976, Donald Devine

¹⁷ 29CFR1926.1053(a)(18)

- There is no reference to fall protection in 1910 for portable ladders, but the Construction standards¹⁸ state, “Requirements relating to fall protection for employees working on stairways and ladders are provided in Subpart X.” Nothing in Subpart X states that fall protection on portable ladders is required. If you need something concrete OSHA issued several Interpretation letters confirming that fall protection is not required for portable ladder¹⁹ use as long as you are working within the envelope of the ladder.²⁰ What is the envelope of the portable ladder?. (See Exhibit 3)

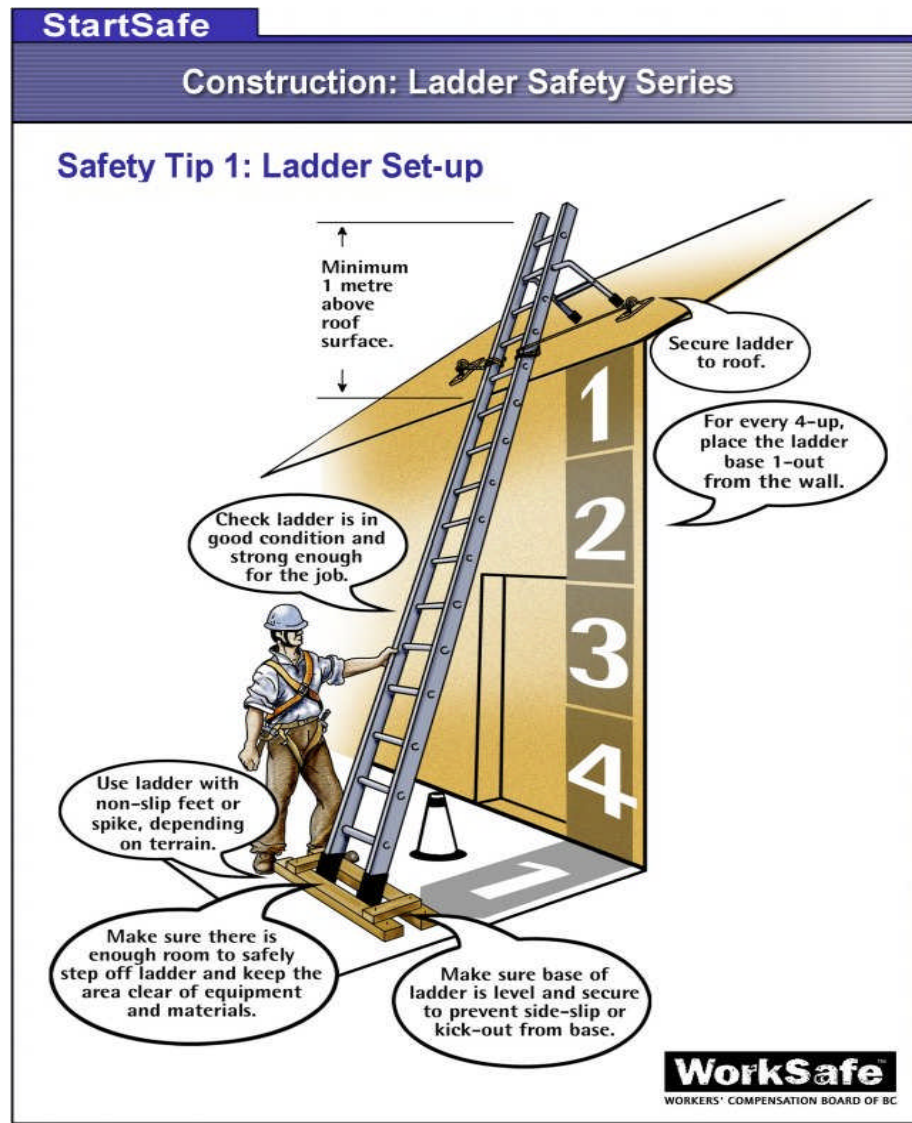


Exhibit 3. 4:1 Ladder Set-up

¹⁸ 1926.500(a)(2)(vii)

¹⁹ Interpretation letters, 1/13/2000, Peter Chaney and 5/21/2003, Deborah Caldwell

²⁰ “Stability”, Interpretation letter, 4/2/1996, Dr. Nigel Ellis

In addition to meeting the envelope requirements of the ladder stability, i.e. 4:1 angle, tie-off, footing, hands free, consider your center of gravity. Is the c.g. outside the rails, in other words, is your belt buckle beyond the side rail? While the c.g. is not an OSHA rule, check any of the manufacturers instructions for ladder use; it's there. If any of the above conditions are not met, you need fall protection.

No. 5 - When you put on a harness and hook up, you are protected.

Really? This may be classed as the biggest myth of all. Have you added up the total distance of deployment for the lanyard and shock absorber on a personal fall arrest system system? Is your anchor point directly over your head on the SRL hook-up? If not, what is the pendulum arc? Is your horizontal lifeline post-tensioned so you will bounce like crazy, or is it the natural line sag that will stretch and add more vertical distance to your total fall. For all the systems, the anchor point in relation to the D-ring is very important.

- Effect of anchor point locations on lanyards w/ shock absorbers. (Depicted in Exhibit 4)

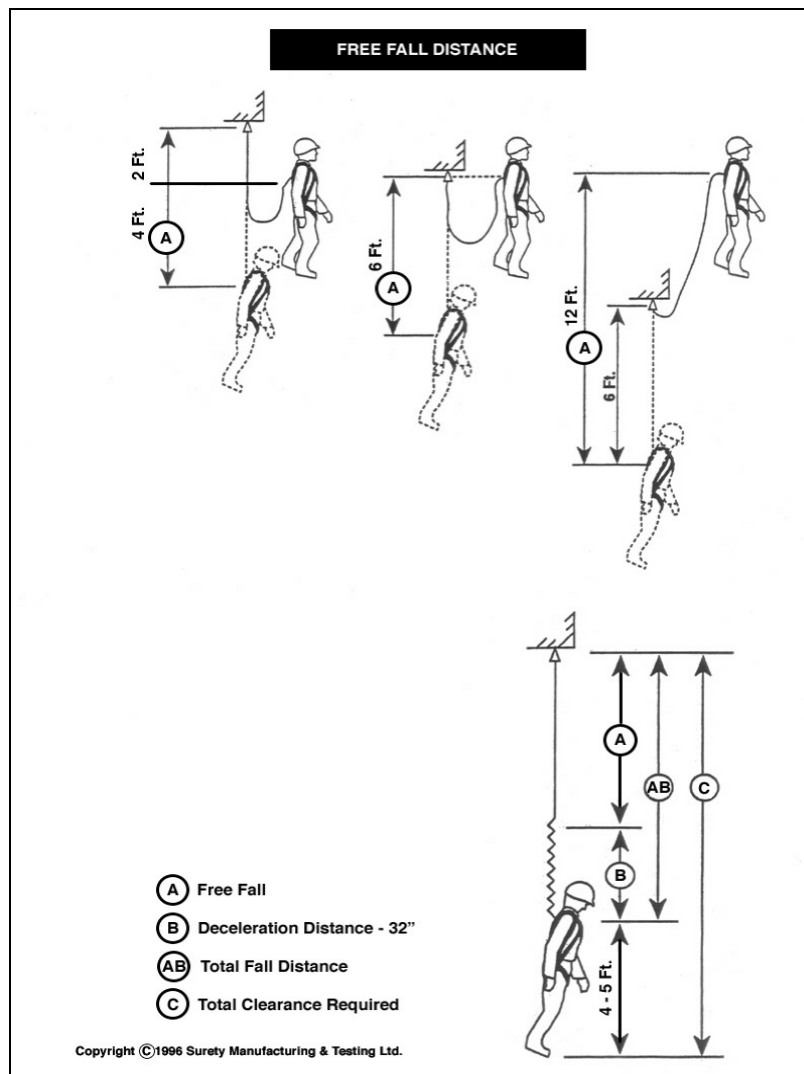


Exhibit 4. Total Fall Clearance Required

- Add it up. A common 6-foot lanyard, 42" shock absorber deployment, minimum of 1-foot harness stretch, plus the 4-foot D-ring height from the walking/working surface = 14-1/2 feet minimum, IF the D-ring is level with your tightened anchor point. The recommended safety factor is 3 feet, not one, so safely you can figure you need a clear, unobstructed fall zone of 16-1/2 feet. Doesn't do much for you if you are working 10 feet off the floor, does it? The only factor you can change is the height relationship between the D-ring on your back and your anchor point. For example, if you are working upright, no bending and with limited horizontal movement, your anchor point can be 5 feet above the D-ring. Now you will only need a fall zone of 11-1/2 feet.

Effect of anchor point on Self-retracting Lifelines (SRLs).

- The SRL is the lanyard. The SRL is attached to an anchor and a D-ring. Do not attach the SRL to a lanyard. An SRL is required to lock-up in less than 2 feet of fall. Adding it up, 2 feet of fall, 3 feet safety margin and stretch, and the anchor at D-ring height = 9 feet of fall zone. Generally the fall zone will be less because most SRLs are hooked up at, or above head height. If the anchor is moveable so the hookup stays over the wearer, that will be your exposure. If the anchor is fixed, you need to make sure you compensate for any horizontal movement away from the anchor point. This adds fall zone distance and increases the probability of striking objects during descent, or swing.

Effect of tightness of Horizontal lifelines.

- Don't be misled by similar sounding names. The SRL, self-retracting lifeline, is called a lifeline, but is always the connector, or lanyard between the anchor and the harness. The horizontal lifeline is an anchor. To it you attach the lanyard w/shock absorber, rope for a rope grab, rope or cable for restraint, etc. When you add up the numbers you must consider what system you are using as you did before, plus allow either enough added stretch for the lifeline, or make sure the fall zone is clear of objects if the horizontal lifeline is taut and produces more bounce, or possibly a combination of both effects.

No. 6 - Rescue planning:

The final misconception for this presentation is that "Call 911" automatically fulfills your responsibility for rescue planning.

- Calling 9-1-1 may work, or may not, depending on your situation. Time, hanging location and available equipment are the determining factors. Rescue after a fall is only addressed in the Construction standards.²¹ *"The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves."* Prompt is never defined, but an Interpretation letter²² states, *"There are, however, circumstances that, when taken into consideration with other OSHA requirements, could result in a maximum allowable suspension time. An example of this is where the standard requires that employees exposed to electric shock at fixed work locations (i.e. generating stations) must be able to be reached by trained persons within four (4) minutes."*²³ The letter goes on to explain that the 4 minutes is after discovery.

²¹ CFR1926.502(d)(20)

²² Interpretation letter 4/27/2004, James Stewart

²³ 1910.269(b)(1)(ii)

Suspension trauma is not a myth. Suspension trauma is potentially fatal. Suspension tolerance after a fall, may be as little as little as 14 minutes for a full body harness²⁴. Suspension trauma occurs after a period of time in a “suspended harness” after a fall (prolonged static positioning), conscious or unconscious. You have to get the person down “in a timely manner.”

Conclusion

With this presentation, I have attempted to clear up some of the myths and misconceptions by using the standards and the interpretation letters concerning fall protection. Many of these erroneous interpretations have surfaced as early as 1973 when the OSHA went into effect and some have been very pervasive.

Concerning the first five issues presented, I believe they began as honest mistakes, but mistakes never-the-less. As professionals, we cannot perpetrate erroneous interpretations of the standards.

The rescue issue focus is a relatively new issue for many. It is my hope you evaluate each potential fall arrest situation and develop your rescue plan to ensure you are providing timely rescue to protect your workers.

Throughout this presentation, I have tried to point out how knowledge and utilization of interpretation letters can give your client more options and a better chance to provide the most effective fall protection in each situation.

Thank you for your attention.

Acknowledgements

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²⁴ Brinkley Report to OSHA – 11/86